

# **Control and Prevention-Tuberculosis**

## **Burma Country Narrative**

**Family Health International (FHI 360)**

**FY2013 Annual Performance Report  
(October 1, 2012 – September 30, 2013)**



**USAID**  
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**CAP-TB**  
CONTROL AND PREVENTION  
OF TUBERCULOSIS

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## Acronyms

3MDGF	The Three Millennium Development Goals Fund
BHS	Basic Health Staff
CAP-TB	Control and Prevention of Tuberculosis (Greater Mekong Sub-region Multidrug Resistant Tuberculosis Prevention and Management Project)
FHI 360	Family Health International
FY	Fiscal year
GFATM	The Global Fund to Fight AIDS, Tuberculosis and Malaria
GPs	General Practitioners
IAs	Implementing Agencies
IEC	Information, education and communication
IR	Intermediate Result
JICA	Japan International Cooperation Agency
MBCA	Myanmar Business Coalition on AIDS
MDR-TB	Multidrug resistant tuberculosis
MHAA	Myanmar Health Assistants Association
MMA	Myanmar Medical Association
MOU	Memorandum of Understanding
NTP	National TB Control Program
PGK	Pyi Gyi Khin
PICTs	Program to Increase Catchment of Tuberculosis Suspects
PM	Program manager
PMP	Performance management plan
PSI	Population Services International
TA	Technical assistance
TB	Tuberculosis
TMO	Township Medical Officer
USAID	United States Agency for International Development
The UNION	International Union Against Tuberculosis and Lung Disease
WHO	World Health Organization
WTB Day	World TB Day

## Narrative I: Executive Summary

FHI 360 collaborated with the National TB Program and four CAP-TB implementing agencies (IA) in Burma with the goal of delivering focused interventions for each of the components of the CAP-TB strategic model:

- **Prevention and training:** Community engagement, prevention education through outreach workers, and training of general practitioners (GP) on programmatic management of MDR-TB to engage in diagnosis and referral to NTP sites.
- **Early diagnosis:** TB screening and rapid MDR-TB diagnosis using a GeneXpert unit provided to the Lower Myanmar TB center; early detection and referral of suspected TB cases through CAP-TB partners.
- **Treatment initiation:** Advocacy with WHO and other partners to initiate MDR-TB treatment using the GeneXpert results; sharing regional experiences.
- **Treatment success:** Providing a package of services, ensuring quality standards for infection control, and piloting community-based treatment and monitoring by community supporters through home-based care.
- **Coordination:** TB Technical Strategic Group quarterly meetings and bimonthly meetings of CAP-TB partners.

The CAP-TB partners include the following organizations and portfolios:

- ***Myanmar Medical Association (MMA):*** Develop curriculum and conduct trainings to GPs from 18 MDR-TB townships. Conduct DOTS to MDR-TB patients, manage minor adverse events, and refer cases to medical facilities using community supporters in two pilot townships in Yangon and Mandalay.
- ***Pyi Gyi Khin (PGK):*** Provide a “living support package” to MDR-TB patients. Conduct community outreach, case finding, and referral for TB/MDR-TB patients, and carry out home-based care including contact investigation and infection control in six townships in Yangon.
- ***Myanmar Health Assistant Association (MHAA):*** Provide a “living support package” to MDR-TB patients, and conduct community outreach, case finding and referral for TB/MDR-TB patients, and carry out home-based care including contact investigation and infection control in seven townships in Mandalay and two townships in Yangon.
- ***Myanmar Business Coalition on AIDS (MBCA):*** Provide screening for all employees, advocate for workplace policies around TB, conduct community outreach, case finding and referral for TB/MDR-TB patients in Monywa Industrial zone.

During the first and second quarters of FY13, the Burma CAP-TB team has focused on project start-up and on building the capacity of our IAs to carry out project interventions. The project has also started activities to strengthen linkages between health facilities for referral of suspected TB cases, by means of advocacy meetings in coordination with NTP, WHO and other partners working on TB control. CAP-TB Partners launched the project in conjunction with the 2013 World TB day activities in March, and started community outreach and the package of support in April. CAP-TB partner MMA has developed a training curriculum together with NTP and WHO, and conducted a series of trainings of GPs starting in June.

In addition to the planned activities in the FY13 workplan, CAP-TB Burma has integrated activities for children, who are known to be at risk for TB and MDR-TB. Prevention and treatment of childhood TB / MDR-TB are critical, particularly in the country of Myanmar where the health indicators for children under 5 years of age are very poor (as observed in a recent situation analysis by UNICEF). The most effective way to prevent MDR-

TB is to successfully diagnose and treat drug-susceptible TB. In alignment with the NTP priorities, CAP-TB has defined children as a risk group for TB and MDR-TB. Childhood TB has historically been critically under-diagnosed and under-treated in Myanmar, as it is in many countries worldwide. Surprisingly, a recent mission revealed that children have been over-treated (many empirically) in the last year and there is an urgent need for feedback and planning among stakeholders. Toward that end, CAP-TB supported the National Workshop on Childhood TB Management to fill that gap, working in partnership with WHO and GFATM/UNOPS.

During FY13, CAP-TB FHI 360 staff received trainings on:

- USAID rules and regulations, including compliance and USAID Forward
- Project management tools and techniques
- Training of trainers
- Grants management and training for effective management of CAP-TB.

## **Narrative II: Program performance/achievements and key challenges encountered during reporting period by thematic area**

The first quarter of FY13 for Burma focused on completing an MOU with the Myanmar Ministry of Health, and engagement with the four IAs, MMA, PGK, MHAA and MBCA. FHI 360 signed contractual agreements with these IAs in February and signed the MOU with the Department of Health in May. The MOU covered the lifespan of the CAP-TB project through 2016. Starting from March 2013, a number of key activities have taken place, including the initial training of key project staff and the purchase of project equipment. Individual project activities for FY13 are described below, organized by appropriate Intermediate Results (IR) as defined under the USAID contract.

### **IR1: Strengthened MDR-TB prevention**

#### **Output 1.1: Mobilized communities to advocate for and use TB services**

##### ***Activity 1.1.1 Conduct training on TB and MDR-TB for staff from CAP-TB partner organizations to support the CAP-TB strategic model implementation***

The FHI 360 Burma office, in collaboration with CAP-TB partner agencies, conducted two trainings (March and August 2013) for field staff from the CAP-TB IAs (PGK, MHAA, MBCA and MMA) to effectively implement TB/MDR-TB community outreach. The objective is to promote early case detection and referral and enhance community awareness through health education and home visits.

From May to June 2013, FHI 360 provided three trainings for 39 TB champions from MBCA on basic knowledge of TB and MDR-TB infection, prevention, diagnosis, treatment, infection control, and case finding strategies. TB champions are volunteers among factory workers and their family members, and they are able to carry out TB case finding in their respective factories in the industrial zone in Monywa. (CAP-TB indicator 14; USAID PMP 17). On-the-job capacity building and mentoring were carried out as part of regular monitoring visits from FHI 360 as well as refresher trainings during the project.

##### ***Activity 1.1.2 Conduct community outreach activities in project sites to support implementation of the CAP-TB strategic model***

Community Outreach: Field staff from the CAP-TB IAs began carrying out daily educational activities at the end of March in their respective communities. Outreach primarily targeted areas with family members and contacts of MDR-TB patients and other high-risk groups.

Additional targets included urban poor communities living in slums and congested areas, by means of using outreach venues such as tea shops, markets, and the waiting areas at township health centers. Outreach activities included small group discussions, with an emphasis on two-way interaction, to disseminate basic TB information and identify TB suspects. Flip-charts with pictures and pamphlets were used to communicate with the audience.

During this reporting period, CAP-TB IAs reached 5,248 individuals (including 2,268 men and 2,980 women) in 17 townships (CAP-TB Indicator 2, USAID PMP Indicator 9). CAP-TB IAs also used 20,745 IEC materials (19,919 pamphlets, 644 posters, 102 t-shirts, and 80 caps to promote TB prevention during outreach (CAP-TB Indicator 4).

Case finding: Following community outreach, case finding yielded 151 beneficiaries (60 men and 91 women) with TB symptoms (CAP-TB indicator 3). All were referred to TB/MDR-TB related services at township health centers, and among those 139 had been taken up as of the writing of this report. (CAP-TB Indicator 13)

Challenge: In the Mandalay region, CAP-TB partner MHAA planned to carry out community outreach for the general population (urban poor). The Union (International Union Against Tuberculosis and Lung Disease) is also doing active case finding, DOTS supervision, and contact tracing at TB patients' homes in Mandalay under TB REACH. At the beginning, MHAA planned to cover the area that the Union does not reach -- Mandalay has a high population as Myanmar's second largest city. During implementation, MHAA discovered that about half of the audience in most health education sessions had already been given health education on TB by UNION. Also, TB suspected cases had already been referred by Union volunteers. There was service overlap with the Union, and therefore MHAA has faced a challenge to reach our targets. The Union has assigned 2 TB supervisors to each township and 20 volunteers to each township. They also provide the sputum collection cups during contact tracking of the TB and MDR-TB patients, which is more comfortable for clients. Thus, after discussion with FHI 360, MHAA reprogrammed, and focusing mainly on family members and contacts of MDR-TB patients as those are not included in the Union targets.

***Activity 1.1.3 Screen all employees under MBCA businesses for TB and link with Township Health Centers for referrals to support CAP-TB strategic model implementation***

MBCA conducted small group discussions on general TB knowledge and TB signs and symptoms in factories within the Monywa industrial zone. These discussions were aimed at promoting screening for employees with TB symptoms, advocating for workplace TB policies, providing TB/MDR-TB IEC materials, and linking workers to TB services at the MBCA non-profit clinic and nearby township health centers. Trained volunteers (TB champions) are also strengthening community outreach activities by raising awareness within their workplaces, conducting monthly experience-sharing with outreach workers, and assisting referral services.

TB Screening: Small group discussions in factories of Monywa industrial zone covered 3,519 employees and family members, including 1,460 men and 2,059 women (CAP-TB 2, USAID PMP Indicator 9). MBCA provided 46 referrals (CAP-TB indicator 3) and all had been screened for TB as of the writing of this report (CAP-TB Indicator 13). A total of 11,196 pieces of IEC material, including 10,642 pamphlets, 247 posters, 173 t-shirts and 134 caps (CAP-TB Indicator 4), were distributed to beneficiaries.

Challenge: Since MBCA is currently working only in the industrial zone, fewer TB suspects were found and referred than planned—due to the “health worker” effect. It was difficult to reach the target for TB suspect referral. Thus, MBCA will expand activities to businesses downtown for case finding and community mobilization activities.

***Activity 1.1.4 Commemorate World TB day with activities to advocate for TB services***

CAP-TB project supported and participated in World TB Day activities in close collaboration with NTP. These activities aimed to promote TB/MDR-TB services in selected townships through:

- Distribution of IEC materials (pamphlets, caps, t-shirts and posters)
- Speeches by key stakeholders (including TB patients, community leaders, Township Medical Officers, and local government representatives)
- Presentations on TB epidemiology in Burma and in the world, the fight for TB elimination, and infection control advocacy
- Photo exhibitions of community outreach activities and DOTS providers

The World TB Day activities organized by CAP-TB IAs attracted a total of 615 individuals (251 Men and 364 Women) (CAP-TB Indicator 2, USAID PMP Indicator 9), including stakeholders and beneficiaries to be alert about TB control. 5,649 pieces of IEC material (4,344 pamphlets, 524 posters, 424 t-shirts and 357 caps) were distributed during these activities (CAP-TB Indicator 4). Individuals were counted using CAP-TB data collection forms 4.2 and 4.3

## **Output 1.2: Scale-up implementation of TB infection control in health facilities**

### ***Activity 1.2.1 Strengthen TB-IC in health facilities, households, and communities***

In guidance with NTP recommendations, the CAP-TB team developed a checklist for infection control using regional references and a QA checklist. This checklist is a tool to assess infection control at MDR-TB patients' households, intended for use by field staff and volunteers during home visits. It covers 3 main levels of infection control: 1) Administrative controls 2) Environmental controls and 3) Personal Protection. The assessment through this checklist has been done on a monthly basis to determine the progress of improvement, and re-evaluated after 6 months.

During this reporting period, total of 262 MDR-TB patients from 13 covered townships (7 in Mandalay, 6 in Yangon) were evaluated on the 10 critical points from the checklist, of which 7 out of 10 points must be met for a satisfactory review. 98% met infection control standards. (CAP-TB Indicator 6) See Appendix I for the full infection control checklist.

Challenge: Many MDR-TB patients have come from outside the NTP MDR-TB project area, and are staying at temporary homes or shelters to be able to receive treatment. House rental cost in Yangon and Mandalay is expensive, and therefore most of the patients have to reside in small, congested areas, which is a big infection control risk. CAP-TB partners sketched diagrams of MDR-TB patients' households during home visits in 11 townships to better gauge the issues at the household level and consider potential solutions.

## **IR 2: Strengthened MDR-TB management**

### **Output 2.1: Ensured capacity, availability, and quality of laboratory testing to support the diagnosis and monitoring of TB patients, including the rapid diagnosis of MDR-TB**

#### ***Activity 2.1.1 Procure GeneXpert machine and consumables***

FHI 360 has procured 1 GeneXpert machine and 2,200 cartridges, which arrived in Burma at the end of June.

#### ***Activity 2.1.3 Set up GeneXpert machine and distribute microscopes to townships***

During June, the CAP-TB team made preliminary site visits to the Lower Myanmar TB Center, the site for the project's GeneXpert. The machine was installed with its accessories on

2<sup>nd</sup> August with the support of local representative from Cepheid (GeneXpert manufacturer) and cartridges were delivered. The GeneXpert machine plus other essential items including a printer, generator, and refrigerator for specimens were all procured for the LMTBC.

Challenge: In Burma, the process for importing equipment such as a GeneXpert is complicated and time consuming. It must pass through different ministries for tax exemption and import permits. After arrival, custom clearance and removal from the central medical store involved further lengthy procedures. The process was started in April and FHI 360 received the GeneXpert machine during the last week of June. This bears on the underachievement of the target for this year.

## **Output 2.2: Strengthened case-finding and referrals for MDR-TB**

Given the high priority focus on children as a risk group for TB, CAP-TB supported the National Workshop on Childhood TB Management organized by NTP in collaboration with WHO on 19-20 of August, 2013. During August 11-18, Professor Stephen Graham from University of Melbourne carried out field visits and reviewed the NTP on childhood TB management. On the first day of the workshop, the current situation and findings were presented, followed by international recommendations and best practices. A total of 75 participants from the whole country (3 chest physicians, 41 pediatricians, 19 from NTP including regional TB officers, 4 from WHO and 8 from NGOS) were divided into groups and held discussions on the second day. Group discussions focused on the rationale behind diagnosis, current practices, challenges, and ways forward. The workshop was successfully concluded with a draft action plan with recommendations resulting from the groups' work.

CAP-TB will also advocate and mobilize resources to use GeneXpert machine for the diagnosis of childhood TB and MDR-TB.

### ***Activity 2.2.1 Screen all retreatment TB cases for MDR with GeneXpert machine***

During August and September, a total of 201 samples were tested and 48 MDR-TB cases have been diagnosed with the CAP-TB-supported GeneXpert (CAP-TB 9, USAID PMP Indicator 7).

### ***Activity 2.2.2 Provide education to members of populations at high risk for MDR-TB***

CAP-TB IAs supported joint visits to MDR-TB patients conducted by outreach workers (ORWs) and Basic Health Staff (BHS). During these daily visits, BHS provided medication while ORWs conducted contact investigations and provided patients with nutritional support, infection control education and drug adherence counseling. These joint visits are intended to harmonize support for MDR-TB patients and ensure sustainability and continuity of care. For MMA, volunteers (Community Supporters) are conducting home visits and providing evening DOTs to 32 selected MDR-TB patients in South Okkalapa township, Yangon and Chan Mya Thar Zi township, Mandalay.

As of September, 4 partners conducted infection control activities at 634 MDR-TB patients' households as part of home-based care interventions in 17 coverage townships (9 in Yangon, 7 in Mandalay and 1 in Monywa).

### ***Activity 2.2.3 Strengthen referral linkages for MDR-TB suspects and patients between concerned service providers***

CAP-TB IAs strengthened referral linkages for patients at risk for MDR-TB as one component of outreach activities and advocacy activities. These include strengthening referral linkages for treatment failure patients, treatment defaulters, patients who remain



smear positive at two months, people in close contact with known MDR-TB patients, and people living with HIV (PLHIV). Please refer to activity 1.1.2 and 1.1.3 for outputs.

### **Output 2.3: Strengthened human resource capacity for MDR-TB management**

#### ***Activity 2.3.1 Conduct training for public and private sector General Practitioners (GPs) on Standard Treatment of TB and diagnosis of MDR-TB and Infection control (100 GPs to be trained in Mandalay and in Yangon)***

CAP-TB Partner MMA organized trainings for GPs in collaboration between the MMA-PPM project and the MMA-CAP-TB project to identify MDR-TB suspects early and build capacity for MDR-TB patient management, as the NTP will soon authorize GPs to treat MDR-TB patients. The training curriculum was adapted from NTP PMDT training guidelines and was reviewed by the NTP. Trainers and facilitators were drawn from NTP, WHO, FHI 360 and MSF-Holland. The FHI 360 team presented the CAP-TB strategic model, which is based on strengthening the TB health system for prevention, diagnosis, and treatment for MDR-TB. A total of 233 GPs from 16 PMDT townships have been trained through 9 training sessions in FY13. (CAP-TB indicator 15, USAID PMP 18))

In the primary scope of work with MMA, trainings were intended for GPs who are practicing Scheme 3 services under MMA-PPM project. Scheme 3 is an NTP affiliated DOTS center/clinic where GPs provide free DOTS service, excluding laboratory service, to all TB patients. Although there were fewer active Scheme 3 GPs when CAP-TB initiated the trainings, some Scheme 1 and Scheme 2 GPs from MMA were enthusiastic and motivated to attend the trainings, and CAP-TB has included those GPs in the project's trainings.

A total number of 41,800 BCC materials (41,580 pamphlets and 220 posters) were provided to GPs for further distribution to beneficiaries at their clinics (CAP-TB indicator 4).

#### **Challenges:**

- Initial program startup was delayed as the program funding flow was late due to a prolonged negotiation and sub-agreement process between FHI 360 and MMA.
- MMA had to negotiate repeatedly with GPs to settle the training date, as GPs have varying schedules. Some trainings had to be rescheduled 2-3 times.
- Since many GPs are practicing in their clinics privately, they are not usually willing to treat infectious TB disease with no profit. Some of them did not attend the CAP-TB PMDT training because they thought that they would be forced to manage MDR-TB patients who are highly infectious.
- MMA also had challenges related to the human resources needed for organizing trainings on time, and related to the availability of qualified trainers from the NTP and WHO, as these trainers have very tight schedules.

FHI 360 has worked closely with MMA to monitor progress and MMA has provided regular updates related to the possibility trainings delays for the FY13 plan. MMA may cover only 16 out of the planned 18 townships during FY13 because of recent conflict situations in Meikhtila and Lashio.

#### ***Activity 2.3.2 Conduct training for Township Medical Officers in standard diagnosis of TB, x-ray reading, general clinical practice, infection control, community mobilization, financial management, data management***

International consultants Dr. Greg Symons (Pneumologist, UCT Lung Institute, South Africa) and Dr. Calligaro Symons (Pneumologist, UCT Lung Institute, South Africa) conducted two three-day trainings in Mandalay and Yangon. One training covered general clinical practice, infection control, community mobilization, financial management and data management, done during late FY12 (September 2012) with the support from TB REACH. This training was

expected to facilitate development of effective and sustainable partnerships among the public, private and civil society to ensure delivery of quality services by the National TB Program in Myanmar. The participants were basic health staff, medical doctors, township medical officers from the government, GPs from MMA, and partners' field staff.

This TB REACH training laid the groundwork for the CAP-TB-supported training, which covered standard diagnosis of TB and chest X-ray recording and reporting system (CRRS). This was targeted to train the clinicians from the government and private sectors to build capacity in clinical reporting of chest radiographs particularly to identify TB. These trainings were conducted during October 2012 (1-3 Oct in Mandalay and 4-6 Oct in Yangon) by the NTP and the Union, with support from CAP-TB. Attendees included a total of 57 clinicians (CAP-TB Indicator 14, USAID PMP Indicator 17) (26 in Mandalay and 31 in Yangon) including public sector township medical officers and TB Team Leaders from 22 project townships and private sector general practitioners (32 from Public and 25 from Private.)

A test was done after each CRRS training, and two grades were defined out of the results. "A-grade" readers were members who have attended CRRS training course and undergone, but not passed, the course evaluation, and are thus certified to take part in readings involving the CRRS in collaboration with one or two more reporters, provided that one reader has a B grade rating. "B-grade" readers are the ones attended CRRS training course and attained the required score, and are thus certified to take part in readings using the CRRS with other "A-" or "B-grade" readers. An "A-grade" reader who wishes to upgrade to a "B-grade" rating does not need to re-attend the CRRS course, but must take part and pass the formal evaluation at a future date with the support from the Union. 51 participants have gained "B-grade" (22 from Mandalay and 29 from Yangon) out of 57 participants in total.

#### ***Activity 2.3.3 Conduct TOT for MDR-TB clinical management training in 16 additional townships under the NTP expansion plan for MDR-TB***

CAP-TB supported the training-of-trainers (TOT) on programmatic management of MDR-TB (PMDT) organized by NTP during November 5-12, 2012. In total, 93 public and private sector participants attended the training (CAP-TB Indicator 15, USAID PMP indicator 18), including representatives from each of the four CAP-TB IAs. Following this TOT, all physicians, township medical officers and TB coordinators who attended the training provided community-based training to government Basic Health Staff. CAP-TB partners also participated as trainers for their field staff together with the FHI 360 team.

### **Output 2.4: Scaled-up quality treatment and community approached for PMDT**

#### ***Activity 2.4.1 Provide package of services to MDR-TB patients***

CAP-TB partners supported joint visits to MDR-TB patients conducted by outreach workers (ORWs) and Basic Health Staff (BHS). During these daily visits, BHS provided medication while ORWs conducted contact investigations and provided patients with nutritional support, infection control education and drug adherence counseling. These joint visits are intended to harmonize support for MDR-TB patients and ensure sustainability continuity of care.

The package of services includes nutritional support, transportation support, home infection control, adherence and adverse effects counseling, and is provided on a monthly basis to assist NTP's MDR-TB strategy.

As of September, 519 patients (451 from 9 townships in Yangon Region, 55 from 7 townships in Mandalay region and 13 from 1 township in Sagaing region) had received package of support services delivered to their homes. (CAP-TB Indicator 17)

#### **Challenges:**

- The biggest challenge is the movement of MDR-TB patients between townships, which leads to patients not being in the MDR-TB township for the entire treatment. This is

largely due to movement back to their home townships for economic reasons. It is therefore difficult for outreach workers to carry out contact tracing and to provide the package of support.

- In some parts of the coverage areas, there remains discrimination against MDR-TB patients. So, outreach workers cannot go to certain patients' homes because the patients are afraid of their health status being known by the neighbors, if a person regularly comes and visits their house wearing a mask.

### IR 3: Improved strategic information for MDR-TB

#### **Output 3.1: Strengthened capacity of TB programs to collect, use, and analyze data for management**

##### ***Activity 3.1.2 Provide TA on the development of a national MDR-TB M&E system and database that is compatible with NTP to improve routine data collection, analysis and management***

CAP-TB planned to support the implementation of an MDR-TB database in FY13. Due to funding gaps within the NTP, plans have been delayed for implementing the recommended MDR-TB database that was discussed during an initial assessment (late 2012). This initial assessment was conducted with the technical assistance from WHO, and the plan was for the CAP-TB project to support the database's implementation and roll-out. CAP-TB will help to fill this funding gap in FY14 to enable development of the MDR-TB surveillance database.

##### ***Activity 3.1.3 Strengthen Data Quality Assurance (DQA) and data analysis to Myanmar Medical Association (MMA), Pyi Gyi Khin (PGK), Myanmar Business Coalition on AIDS (MBCA) and Myanmar Health Assistant Association (MHAA)***

During the project set up phase, FHI 360 conducted site visits to regional TB centers and township health centers to introduce the CAP-TB project, advocate for data sharing, align NTP and CAP-TB reporting and data requirements, and explore current practices in order to identify gaps and potential challenges. Ms. Shanthi Noriega, FHI 360 Associate Director, Strategic Information conducted a one-day M&E training for the CAP-TB Burma team and 8 M&E related staff from the CAP-TB IAs (CAP-TB Indicator 21, USAID PMP Indicator 20).

On 10<sup>th</sup> May, a one-day training for Data Quality Assessment was conducted using USAID and FHI 360 templates with objective of learning "Basic principles of DQA, knowledge, and concepts about CAP-TB DQA and knowledge on current practices and future plans." In June, FHI 360 conducted a DQA to implementing partners' field sites in Mandalay and Monywa as well as their headquarters in Yangon, using the CAP-TB DQA guidance and checklists. The DQA reports were shared with partners with action items reviewed.

A one-day training was provided to IAs on 12<sup>th</sup> June 2013 regarding "Data communication and coordination" with the objective of imparting awareness of service overlap and double counting, strengthening of coordination efforts with NTP and local partners, and standardizing the reporting system outside of the CAP-TB project.

#### **Challenges:**

- During FY13, although data verification and error checks had been done in two levels, the IAs needed strengthening of their routine DQA practice. Routine DQA at the IA level should be embedded within their data management process. Routine DQA at project level led by partners themselves will be encouraged during FY 14.
- Manual data compilation was a challenge to data quality requiring great attention to detail to minimize error. The M&E trainings and continuous mentoring visits are needed to ensure data quality and technical competency. Over time, it is expected

that the mentoring and visits from the FHI 360 team should lessen as the IA capacity strengthens.

## **Output 3.2: Increased TB research activities**

### ***Activity 3.2.1 Conduct community survey on consumer demand and health seeking/purchasing behavior for diagnosis, treatment and drugs***

FHI 360 Burma launched the Trends TB module during this reporting period. (CAP-TB Indicator 22, USAID PMP 21) FHI 360 staff trained the field staff of implementing partners on Trends implementation from March 20-22, and data collection began on March 25 with an expected final sample size of 1,230 participants. Trends survey data collection ended on April 26 and a total of 1,022 beneficiaries (410 MBCA, 410 MHAA and 202 PGK) have responded and completed the survey.

## **IR 4: Strengthened enabling environment for MDR-TB control and prevention**

## **Output 4.1: Improved capacity of NTPs to develop, finance, and implement national TB control strategies in line with global strategies**

### ***Activity 4.1.1 Support strategic planning, resource mobilization and implementation of the MDR-TB program***

FHI 360 has actively participated in all technical assistance missions in the country for TB control and continued support for strategic planning, in close collaboration with NTP and WHO. FHI 360 has maintained efforts to advocate for mobilization of resources by all possible donors for MDR-TB programming within and outside the country.

Remarkable milestones that CAP-TB supported and participated during FY 13 were:

- ***March: National evaluation of partners' contributions to community based TB care workshop.*** Hosted the sharing of lessons learned and best practices from partner organizations. The development of a national guideline on community based TB care was recommended, by means of WHO input and the partners' experiences.
- ***NTP Annual Review Workshop.*** Presentation, discussion, and evaluation of the achievements and challenges from the last year of TB control activities among all partner agencies. Program updates and planning were also discussed, concluding with the recommendations for the coming year.
- ***April: Annual technical mission on MDR-TB management.*** Led by Dr. Michael Rich together with Dr. Fraser Wares, determined recommendations for MDR-TB treatment scale-up.
- ***Development of Guidelines on Community-Based TB Care.*** FHI-360 was involved as a member of the writing committee, and contributed to sections on planning community-based TB care at the township level. The final draft was submitted to MOH for final approval and publishing.
- ***August: Childhood TB Management Workshop.*** Conducted by Professor Stephen Graham, this workshop developed ways to improve diagnosis quality and treatment among children.
- ***International TB Symposium.*** This event was organized by MSF in collaboration with NTP and WHO. The main objectives of the Symposium were to reach consensus for challenges in TB care and prevention, to identify opportunities to meet demands for universal access to MDR-TB care, and to advocate for shorter MDR-TB treatment regimens for improved rollout of MDR-TB care in the country. This successful event received support for the piloting of the 9-month ("short regimen") in Burma.

- **September: Technical Mission of Dr. Pierre-Yves Norval on laboratory diagnosis of TB.** This mission was supported by CAP-TB jointly with WHO, and laid out a TB diagnostic and expansion plan for 2014-2018.
- **UNTAID and WHO joint mission for a program launch on Global Project to scale up Xpert MTB/RIF.** Will provide additional support for second line drugs for more than 500 MDR-TB patients. Diagnosis of MDR-TB using the Xpert machine is also highlighted.
- **New MDR-TB Management guideline from NTP.** This guideline was published, and included Xpert as a standard diagnostic tool for case finding, along with a clear algorithm.

The FHI 360 Burma Team, together with a Program Manager from the National TB Program and representatives from the 4 IAs, participated in a Strategic Planning Meeting at FHI 360 APRO office, Bangkok, on August 1-2. The Team prepared the draft strategy for FY14.

#### ***Activity 4.1.2 Enhance the integration/coordination of services at all levels in Yangon and Mandalay with other divisions***

A key component of enhancing the integration and coordination of services at all levels of the TB network has been the active participation of the CAP-TB staff in meetings organized by the NTP, by the USAID Burma mission, and by the CAP-TB team itself.

**Coordination at Central and Regional level:** FHI 360 organized 2 regional level advocacy meetings with all stakeholders and partners, in Yangon on April 8th and in Mandalay on April 10<sup>th</sup>. More than 40 individuals attended these meetings, which included leadership staff from the Regional Health Director and regional TB officers.

FHI 360 has continued to maintain close coordination with the National TB Programme and WHO by regular participation in quarterly TSG meetings. In addition to the normal TSG meetings, FHI 360 keeps close contact with NTP, with visits to Nay Pyi Taw as necessary for all coordination. The team attends additional partner events, such as the “Regional TB evaluation” on July 3 and the “Closing ceremony of Japan’s grant aid for 1st Line anti-TB drugs (2011)” at Nay Pyi Taw on July 25, where CAP-TB had an opportunity to connect with government programs, donor agencies and other NTP partner organizations.

FHI 360 visited the IUATLD office and sites in Mandalay in June to ensure integration of TB control activities between CAP-TB partners and the Union, and to avoid possible overlapping of service delivery.

CAP-TB partners’ activity reports were submitted to the Regional level on a quarterly basis, and to the township level monthly, to ensure coordination.

**Coordination at the Township level:** In addition to the FHI 360-organized regional launch, the four CAP-TB IAs organized a series of township level advocacy meetings specifically for project promotion and coordination with key stakeholders.

**Coordination with USAID Burma:** FHI360 participated in all partner meetings organized by USAID partners during FY13, and presented program updates and shared challenges and perspectives.

**Coordination among CAP-TB partners:** FHI 360 organized both bimonthly and ad hoc meetings with all CAP-TB IAs, discussing issues around monitoring and evaluation and coordination. Nine such meetings and site visits have been conducted during FY 13.

### **Output 4.2: Strengthened partnerships for quality TB care, including private sector**

#### ***Activity 4.2.1 Build the organizational capacity of national partners (MMA, MBCA, MHAA and PGK)***

During this reporting period, 237 partners (4 implementing agencies and 233 general practitioners) worked in collaboration with the NTP by following guidelines/instructions under the NTP and through the national referral system as well (CAP-TB Indicator 26, USAID PMP 24).

For detail of project activities toward organizational capacity building and technical assistance of national partners, refer to the section below, “Capacity building and technical assistance.”

**Activity 4.2.2 Advocate with employers of large companies to provide TB/MDR-TB health education and TB screening for employees**

In Monywa industrial zone, MBCA organized discussion sessions with factory owners/managers and stakeholders to advocate for and support the provision of TB/MDR-TB health education for employees.

### Capacity building and technical assistance

FHI 360 APRO Consultant Mr. Siddhi Aryal conducted an organizational capacity assessment for all local IAs from January 8-11, facilitated by the CAP-TB Burma team. FHI 360’s Organizational Capacity Assessment Tool (OCAT) was used to assess capacity in terms of governance, administration, human resources management, financial management, organizational management, program management, and project performance management. A total of 14 representatives (7 men and 7 women) from private sector NGOs participated in the assessment (CAP-TB Indicator 16).

According to the OCAT, the following areas were prioritized by the IAs as shown:

	AREA 2 Administration	AREA 3 Human Resource	AREA 5 Program Management	AREA 7 External Communication
MMA	3	2		1
MHAA		3	2	1
MBCA		3	2	1
PGK		2	3	1

The recommendations for an action plan relating to each specific priority areas were discussed in detail, including the objectives, evidence of achievement, activities, resources needed, responsible persons and time frame. The follow-up activities have been carried out according to the work plan, with guidance from the capacity building steering committee at the regional CAP-TB team (FHI 360).

As the OCA was designed for self-assessment, the partners defined the above areas as priorities, but FHI 360 emphasized financial management as a top priority for FY13.

1. **Finance:** FHI 360 provided the necessary documents and capacity building requirements to all CAP-TB partners; this was followed by individual coaching by the FHI 360 finance officer with IA finance staff on a continuous basis. During July and August, FHI 360 conducted a Finance and Administrative assessment of all CAP-TB partners (24 July for PGK, 25-26 July for MBCA, 1-2 August for MHAA and 5-6 August for MMA). The checklist covered financial control systems, administration, human resource management, procurement, and travel policy, helping partners to recognize their strengths and weaknesses. Feedback and recommendations were provided during the assessment. In the months after these activities, improvement in partners’ financial reporting has been noted and documented.



2. **Program Management:** FHI 360's Burma Team work closely with the IAs and provide appropriate information on program management and compliance, and continue to provide mentoring support to partners.

A one-day "USAID Rules and Regulations" training was conducted by Ms. Shaila Gupta, Director, Compliance and Risk Management, from the Office of Compliance and Internal Audit on June 21<sup>st</sup> June. 16 program/finance staff from IAs and seven staff from FHI 360 participated in the training. The topics covered included the role of a USAID-supported implementation agency, the current status of compliance, USAID and compliance, USAID Forward, and fraud awareness training.

From 17<sup>th</sup> to 21<sup>st</sup> August, Ms. Sutinee Charoenying, Program Manager, Program Management Unit, APRO sat with each implementing partner for a two-hour session to discuss the program management quality assessment tool, focusing on the areas of sub-award guidelines, processes and tools, sub-award performance, capacity strengthening and identification of further needs for capacity building.

3. **Project Management:** A monthly supportive supervision visit is conducted by a program officer and occasionally the M&E officer. Recommendations provided by FHI 360 were documented and shared with IAs. An activity matrix and deliverable matrix is used by program and M&E staff to support discussion and tracking of program deliverables and/or issues raised.

## Narrative III: Success stories

### *Building trust: Overcoming resistance to treatment against all odds*

Daw, 55 years old, is a widow whose husband passed away 4 years ago from tuberculosis. Since then, her 32-year-old son was treated twice for TB and finally diagnosed with MDR-TB in April, 2013. Because he was concerned about the family losing its sole source of income -- he works in a factory making iron doors -- he refused to initiate MDR-TB treatment.

Like her son, Daw developed signs and symptoms of TB and was treated with Category I and II drugs without success. She, also, was diagnosed with MDR-TB and began treatment in June, 2013. But after 2 months on MDR-TB medication, Daw experienced severe joint pain and stopped her treatment. This impacted her son, reinforcing his resistance to treatment, and finally resulted in his treatment default. Basic Health Staff from their township health center counseled Daw and her son to restart treatment without success.

About 3 weeks of missed doses, Myanmar Medical Association's community supporter, trained through CAP-TB's initiative for community-based DOT for MDR-TB, reached out to these patients. This community supporter was also a familiar neighbor from within Daw's community and with this rapport, succeeded to overcome her resistance. Daw agreed to restart TB treatment after an interruption of 45 days. And just as a familiar neighbor was able to regain Daw's trust, her son was swayed by a voice of reason close to home. Seeing the kind support of the MMA CAP-TB community supporter, he agreed to restart his medications. Experiences like this remind us that a "community-based" focus is not just a buzzword, but a strategy that can lend greater influence than instructions, even those from a medical authority.



A CAP-TB community supporter giving Daw her MDR-TB treatment during daily DOT.

**Program level monitoring results:** Please refer to CAP-TB Data collection form in separate excel sheet

## Annex I: Method used to estimate total number of individuals reached (Narrative)

No estimations were done to calculate the total number of individuals served in FY13. Numbers reported are the actual numbers of individuals trained and reached during the reporting period. Even for data that could be collected as estimations, the CAP-TB IAs reported using actual numbers. Different methods of recording using attendance sheets or other records were used. To maintain confidentiality, attendance sheets are kept in the finance department of each IA since the records contain the personal data (names). Therefore, there may be no primary record (attendance sheet or other source document form) other than the project's reporting form, by program and/or M&E officers. Details for the 4 IAs are provided below.

IA's	Method to record	Record keeping
MBCA	<ul style="list-style-type: none"><li>Attendance sheet</li></ul>	4.3 and Finance
MHAA	<ul style="list-style-type: none"><li>Counting of participants by Community facilitator</li></ul>	4.3 Only
MMA	<ul style="list-style-type: none"><li>Attendance sheet</li></ul>	4.3 and Finance
PGK	<ul style="list-style-type: none"><li>Attendance sheet</li><li>Copy data from nurses and certified number of people by Township Medical Officer/TB Coordinator</li></ul>	4.3 and Finance

## Annex II: Adjustment factor to calculate for potential overlap among different partners and other USG (Narrative)

**USG funded partners:** Only Population Service International Myanmar, funded by US Government through the CAP-3D project, has been working in the same geographic area of CAP-TB. Their program is related to the PPM (Private Public Mix) – DOTS focusing management of first line TB treatment through their Sun Clinics. CAP-TB's focus is on MDR-TB diagnosis and management in those areas. These scopes of work are different, and both partners have been coordinated for implementation. Therefore, there is no overlap in programming between USG partners working under the CAP-TB in Burma and other USG-funded programming. Furthermore, CAP-TB refers patients for TB suspects/patients for diagnosis or treatment to PSI's Sun Clinics when the beneficiaries live nearby in order to complement support.

Planning for the 4 CAP-TB IAs was closely coordinated with the recommendation from NTP to avoid overlapping of geographic area. Although MMA is providing training to GPs from all PMDT townships and some of them are same townships as other partners, their scope of work and activities are completely different from the other IAs. There is therefore no overlap of service delivery among CAP-TB implementing partners.

**Partners funded by other donors:** The CAP-TB project has been programmed in close coordination with the Myanmar NTP, and has carried out mapping of partners' work on TB control. During the launch period in early April, CAP-TB conducted a large scale regional-level advocacy meeting in Yangon and Mandalay, with participation from regional officers and team leaders from NTP, Township Medical Officers, other implementing partners and CAP-TB IAs to avoid service overlap in field level.

CAP-TB has monitored possible overlap during project implementation, and captured some overlap in service delivery with the Union at Mandalay in June. As a result, FHI 360 has guided their partner to shift its program emphasis. Starting from July, FHI 360 has provided TA on standardizing coordination of the reporting mechanism for CAP-TB partners, which

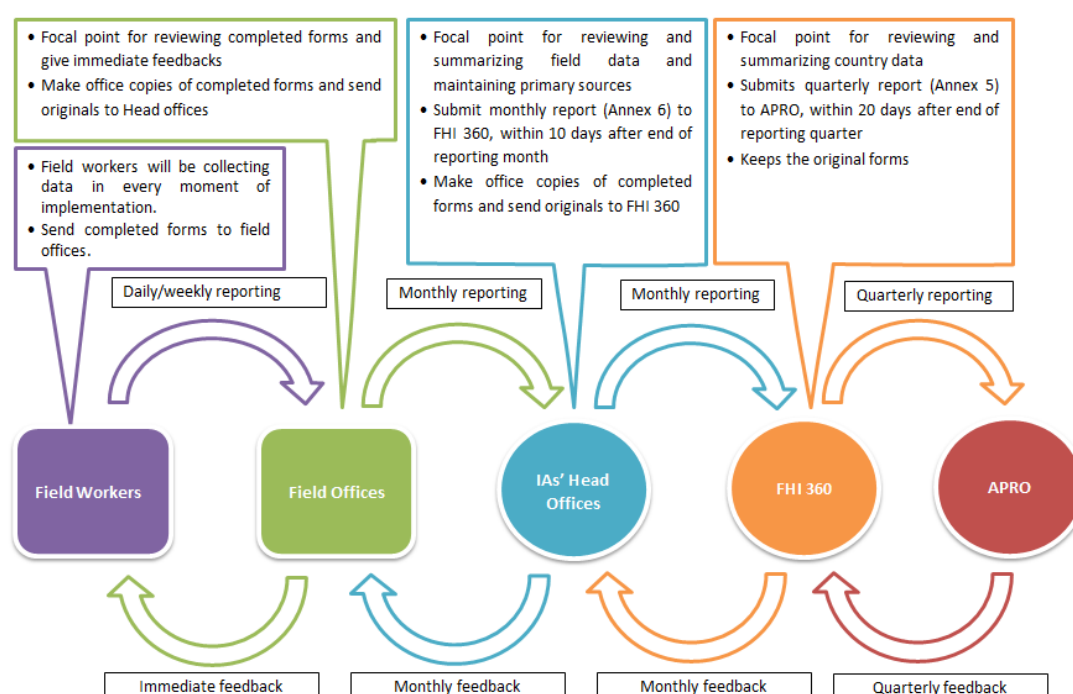


strengthens partners' coordination efforts at the township and regional level, so that TMOs and focal persons from the NTP can obtain updated information about services provided by CAP-TB. These reports were also presented at coordination meetings at the township and regional level. Therefore, there is no overlap in program activities among different NTP partners working on TB control in FY13.

During September, FHI 360 participated in service mapping exercises for resource allocation with NTP, WHO, GFATM and 3MDGF, and ensured that CAP-TB support activities for FY14 are not overlapping with other donor funding activities.

### Annex III: Processes carried out to ensure data quality

FHI 360 provided technical assistance to each IA in developing a data flow, including the flow of reporting, feedback mechanism, and responsibilities of related staff. The data management process of CAP-TB project was explained to program and M&E staff of each IA, using the following model to prioritize review and feedback mechanisms.



CAP-TB's DQA checklist and assessment documents were developed based on the "USAID RDMA Performance Management Plan, Appendix C: Data Quality Assessment Standard Operating Procedures". This served as a guideline for DQA practices in the country. A one-day training (10<sup>th</sup> May) for Data Quality Assessment was conducted using USAID and FHI 360 templates, on "Basic principles of DQA, concepts about CAP-TB DQA, current practices, and plan for the future."

The senior M&E Officer from FHI 360 conducted DQA visits to IA's remote field offices in Monywa and Mandalay and the headquarters in Yangon, using the CAP-TB DQA guidance and checklist. From June 3 through June 10<sup>th</sup>, the visits took place in the field offices and headquarters of MBCA, MHAA, MMA, and PGK. These visits covered the DQA report and strengthened these organizations' data quality practices.

	MBCA	MHAA	MMA	PGK
<b>M&amp;E System</b>	No documented procedure on data	No documented procedure on data	No documented	No documented procedure on

	quality problems		quality problems		procedure on data quality problems		data quality problems	
	No adequate data protection at HQ		No adequate data protection at HQ				No adequate data protection at HQ	
Discrepancies	Field	HQ	Field	HQ	Field	HQ	Field	HQ
	No	Yes (minimal)	No	Yes (minimal)		Yes		No
Limitation	Referral flow and related recording is not clear							
	Coordination with local stakeholders is not regular and/or not informative		Coordination with local stakeholders is not regular					
	Manual data aggregation takes time. Questions on data quality at HQ level		Manual data aggregation takes time. Questions on data quality				Manual data aggregation takes time. Questions on data quality at HQ level	
	Feedback mechanism (to service delivery point) was not documented						Feedback mechanism (to service delivery point) was not documented	
	Weakness in data confidentiality due to lack of project-specific record storage						Weakness in data confidentiality due to lack of project-specific record storage	
	No routine Data Quality Assurance measures in all IAs							
Final grade	Moderate	Good	Good	Good	Moderate		Good	

#### Annex IV: Summary of accomplishments against the work plan and targets:

*Please see CAP-TB Data Collection Form and Annex III, Project Narrative*

## Appendix I: Infection Control Check List

Client-focused activities	Yes	No	NA/Unknown	Actions/Comments
1. Does the TB patient take the DOT in front of the caregiver to enable the continuous treatment?				If not, describe the problem and mention the importance of continuous treatment to the team
If yes, specify directly observed therapy (DOT)				
• Self-medication				
• Monitoring the medication by family member				
• Monitoring the medication by VHV or NCCM staff at home)				
• Monitoring the medication by health care worker at the health facility				
• Others (Please specify)				
2. The patient tells other family members that he is suffering with TB.				If not, describe the pros and cons of the disclosure
3. Other members have cough symptoms. If yes, ask how long the symptoms have persisted.				If cough symptoms last more than two weeks, recommend that the family members take the TB screening test at the health facility
Number of family members who share the same house with the patient is ..... persons. ○ Child less than 5 years old ..... person (s) ○ Elder ..... person (s) ○ Pregnant woman ..... person (s)				
4. Have the family members passed the TB screening? If yes, no. of person ..... person (s)				
Type of TB screening (multiple choices)				
○ Symptom diagnosis by public health officers				
○ Sputum examination				
○ Chest X-ray				
○ Symptom evaluation				
○ In case of children, has the person taken the Tuberculosis Skin Test (TST)?				
5. The patient can demonstrate how to cough hygienically.				If not, ask him to demonstrate how to cough hygienically.
If yes, does the patient do the following:				

## Infection Control Checklist for TB and MDR TB patient households by ORW\_Burma

Client-focused activities	Yes	No	NA/Unknown	Actions/Comments
○ Cover his mouth with a handkerchief/ tissue paper				
○ Cover his mouth with his arm				
6. Does the patient know how long he/she needs to wear the mask?				If not, educate to wear during intensive phase of any treatment.
7. Do Household members/caregivers know how long he/she needs to wear the mask?				If not, educate to wear during intensive phase of any treatment.
8. Does the patient know how to safely dispose sputum?				If not, teach him the proper method.
9. While the culture result is positive, the patient can spread TB to others in the first 2-3 weeks of the treatment. The patient knows how to reduce the risk of TB spread while he is in the period of communicability.				If not, teach him how to prevent it from spreading to others.
Example: <ul style="list-style-type: none"> <li>• Joining an outdoor party in the period of communicability (or until the culture is negative)</li> <li>• Greeting neighbors from the area outside the house instead of the area inside</li> <li>• If possible, avoid the crowded travel method.</li> </ul>				
10. The patient knows how to reduce TB spread when meeting guests or visitors is unavoidable (A guest means those who are not family members)				If not, teach him how to prevent the spread to others.
Example: <ul style="list-style-type: none"> <li>• Have the patient relax/ sleep in a separate room with closing door</li> <li>• Open doors and windows</li> <li>• Cough hygienically</li> </ul>				
11. Patient's family members understand the importance of ventilation and help open the windows during the day.				Teach him the importance of good ventilation to help lessen TB spread
12. The patient was diagnosed with HIV.				If no, send the patient to a clinic to get advice and bloodletting. If yes, get rechecked if it is more than 6 months ago.
13. If the patient was diagnosed with HIV, please verify whether it's documented or not.				If the result is negative, continue to support him to ensure he does not get infected. If the result is positive, check if the patient needs to receive the

## Infection Control Checklist for TB and MDR TB patient households by ORW\_Burma

Client-focused activities	Yes	No	NA/Unknown	Actions/Comments
				services here or somewhere else
14. A family member of the patient has been diagnosed with HIV.				If not, describe and point out the benefits of HIV diagnosis.
<ul style="list-style-type: none"> <li>Does the affected person know the HIV result?</li> </ul>				
<ul style="list-style-type: none"> <li>The HIV caregiver knows that the HIV patient is in contact with the TB patient.</li> </ul>				If the HIV result is positive, suggest that he goes for the TB screening test at the health facility and if possible, give Isoniazid to prevent TB.

Environmental issues to be observed at each visit	Yes	No	NA/Unknown	Description
1. Windows are installed at the patient's house.				
<ul style="list-style-type: none"> <li>Doors and windows are open to ventilate the house as much as possible.</li> </ul>				
2. The patient has many visitors.				
<ul style="list-style-type: none"> <li>Only family members visit the patient.</li> </ul>				
3. Such persons at risk are living in the same house as the patient:				
<ul style="list-style-type: none"> <li>Child less than 5 years old</li> </ul>				
<ul style="list-style-type: none"> <li>HIV patient</li> </ul>				
<ul style="list-style-type: none"> <li>Elder</li> </ul>				
<ul style="list-style-type: none"> <li>Pregnant woman</li> </ul>				
<ul style="list-style-type: none"> <li>Diabetes patient</li> </ul>				

Personal Protection for Health Care workers	Yes	No	NA/Unknown	Description
1. When possible, you take the patient to collect his sputum in an open air location.				
2. If the patient is MDR-TB or XDR-TB, you wear a surgical mask during the communicability period. (During Intensive phase which is about 6 months for MDR TB and 2 months for TB)				

## Appendix II: PMDT training evaluation

### MMA CAP-TB Project

#### Training Evaluation Form

*for participants in "Training to GPs on PMDT"*

June 2013

Participant role:    GPs                      Program                      M&E

Gender:                      Male                      Female

**Instruction:** Please indicate your level of agreement with the statements listed below in# 1 - 11.

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	The objectives of the training were clearly defined.					
2	Participation and interaction were encouraged					
3	The topics covered were relevant to me					
4	The content was organized and easy to follow.					
5	The materials distributed were helpful					
6	This training experience will be useful in my work.					
7	The trainer was knowledgeable about the training topics.					
8	The trainer was well prepared.					
9	The training objectives were met.					
10	The time allotted objectives were met.					
11	The meeting room and facilities were adequate and comfortable.					

More questions on back →

12. What did you like most about this training?

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13. What aspects of the training could be improved?

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14. What additional trainings related to this topic would you like to have in the future?

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15. Please share other comments or expand on previous responses here:

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**Thank you for your feedback!**

## Appendix III: Outreach Worker pre- and post-test

### Pre and Post Test Question

Name -----

Date -----

Circle the correct answer(s).

1. The main cause of TB disease
  - a) Hereditary
  - b) TB bacillus
  - c) Smoking
2. TB can be transmitted through following modes.
  - a) Coughing and sneezing of a TB patient
  - b) Sexually transmitted
  - c) Injecting drugs
  - d) Sharing the utensils with TB patients
3. TB can be diagnosed by
  - a) Chest X rays
  - b) Sputum microscopy
  - c) Sputum culture
4. Choose the correct answer(s).
  - a) Pregnant women should not take anti-TB medications
  - b) Lactating women who are taking anti-TB medications can continue breastfeed their babies
  - c) TB can be treated successfully in an HIV/TB coinfecting patient
5. To prevent the transmission of TB
  - a) Mouth and nose should be covered while coughing and sneezing
  - b) Active case finding and proper treatment
  - c) Sputum of TB patients should be discarded properly
6. Duration of TB treatment is
  - a) Under 1 month
  - b) 1 month to 5 months
  - c) 5 months to 1 year
  - d) More than 1 year
7. Duration of MDR TB treatment is
  - a) Under 1 month
  - b) 1 month to 5 months
  - c) 5 months to 1 year
  - d) More than 1 year
8. MDR TB can cause only in retreatment patients.
  - a) True



- b) False
9. MDR TB is defined as resistant to at least ----- most potent anti-TB drugs.
- a) 2
  - b) 3
  - c) 1
10. They are the high risk population to contract tuberculosis
- a) Old age
  - b) Under 5 years old child
  - c) Diabetes patient
  - d) HIV patient
  - e) Pregnant woman
11. Adherence means
- a) Taking the drugs in right dose
  - b) Taking the drugs regularly
  - c) Taking the drugs up to end of the course